U. S. DEPARTMENT OF AGRICULTURE

FARMERS' BULLETIN No. 1608

The OPERATION AND CARE OF THE COMBINED HARVESTER-THRESHER

TROUBLE CHART

1. Loss of grain by reel and platform.
   - *a.* Reel not set to throw cut grain well back on canvas.
   - *b.* Reel set too high to pick up lodged grain.
   - *c.* Reel slats too narrow.
   - *d.* Platform backstop too low.
   - *e.* Outer end of platform not screened.

2. Cracked grain.
   - *a.* Cylinder speed too high.
   - *b.* Concaves set too high or too many concave teeth.
   - *c.* Concave or cylinder teeth bent or out of alignment.
   - *d.* Concave not parallel with cylinder.
   - *e.* Cylinder and concave clearance too small.
   - *f.* Threshed grain returned to cylinder with tailings.
   - *g.* End play in cylinder shaft.

3. Grain loss in straw.
   - *a.* Unthreshed heads.
     1. Grain too damp.
     2. Cylinder speed too slow.
     3. Concaves set too low or not enough concave teeth.
     4. Concave or cylinder teeth bent or out of alignment.
   - *b.* Threshed grain.
     1. Too much wind.
     2. Wind blast not properly directed.
     3. Cylinder and separating units running too fast.
     4. Straw agitators running too slow.
     5. Overloaded sieves.
     6. Proper sieves not used.
     7. Sieves not properly adjusted.
     8. Straw chopped up badly.
        - *a.* Too many concave teeth.
        - *b.* Concave set too high.

4. Poor cleaning.
   - *a.* Sieve openings too large.
   - *b.* Elevators clog.
   - *c.* Sieves overloaded.
     1. Feed too heavy—too much straw.
     2. Speed too slow.
     3. Straw chopped up too fine.
   - *d.* Deflectors out of adjustment.
   - *e.* Not enough wind.
   - *f.* Weeds.

5. Cylinder clogs.
   - *a.* Straw, green or damp.
   - *b.* Cylinder speed too slow.
   - *c.* Feed too heavy—too much straw.

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THE OPERATION AND CARE OF THE COMBINED HARVESTER-THRESHER

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CONTENTS

INTRODUCTION

THE HARVESTING AND THRESHING of grain were considered as separate and distinct operations until large-scale production demanded rapid and more economical methods. A machine was devised as early as 1828 for combining these operations, but was considered impracticable. Similar machines were built and tried out during later years but this method of harvesting did not become established until about 1880. From this date until about 1920 the use of the combined harvester-thresher, generally known as the combine, was confined largely to the States along the Pacific coast because it was believed that crop and weather conditions were unfavorable to its use elsewhere. The use of the combine has increased rapidly, and in 1928 it was used in practically all States where grain is grown extensively. From 1920 to 1928, inclusive, over 48,000 combines were sold in the United States.

With the customary threshing rig much of the threshing has been done by experienced operators who operated their machines primarily for custom work. With the combine, farmers are operating their own machines, thereby decreasing the cost of labor. In some cases the operators are inexperienced and have had considerable trouble with their machines. In many cases breakdowns and delays might have been avoided if proper precautions had been taken. Frequently the combine does a poor job of threshing and cleaning because the machine is not properly adjusted.

[1] This bulletin is based on information secured in cooperation with the Bureau of Agricultural Economics, Bureau of Plant Industry of the United States Department of Agriculture, and the agricultural experiment stations of Texas, Oklahoma, Kansas, Nebraska, Montana, North Dakota, South Dakota, Minnesota, Indiana, Illinois, Pennsylvania, and Virginia.

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The combine, as the name implies, cuts and threshes the grain at one operation. The sickle, reel, platform, and platform canvas are similar to those used on a binder or header. The threshing and separating parts are practically the same as those used on a stationary thresher. Combines vary in size from those which harvest a 35-foot swath of grain to those which harvest an 8-foot swath. A combine with a 35-foot cutter bar, when pulled at 2.5 miles per hour, will cut and thresh approximately 10 acres of grain per hour, while the 8-foot size, under the same condition, will cut and thresh approximately 2½ acres per hour. Under average conditions, of course, a machine will not harvest the maximum acreage per hour because of adverse crop conditions and necessary delays to permit oiling, adjusting, and repairing.

Power for operating the combine is usually supplied by an engine mounted on the machine. Some of the smaller combines are operated by a power take-off from the tractor, but this method is not entirely satisfactory because of lack of power under some conditions. When equipped with an engine the combine may be pulled by either a tractor or horses. The hillside types are equipped with brakes and a device for leveling the thresher to prevent the grain from accumulating on one side of the separator when it is operating on a hillside.

POWER AND FUEL

Table 1 shows the usual power requirements for operating combines of different types and sizes. However, the actual power requirements for a given-sized machine, whether tractor or horse drawn, depends largely upon the type and condition of the soil, topography, and crop conditions. Many operators use too large a tractor because it is the only one available. When the tractor is too small and adverse conditions exist, power may be supplemented by hitching on an additional tractor or a team of horses. For ordinary conditions, approximately one rated tractor drawbar horsepower is required for each foot of width of the cutter bar, provided the combine is equipped with an auxiliary engine. When the combine is operated from a power take-off a larger tractor is required than for the same sized machine equipped with an engine.

TABLE 1.—*The usual power requirements for harvesting with the combine*

Type of combine	Width of cut	Rated drawbar power of tractor	Horses required
	Feet	*Horsepower*	*Number*
Power take-off	8 to 10	15 to 18	
With auxiliary engine	9 to 12	10 to 15	6 to 10
Do	14 to 20	15 to 25	8 to 16

Studies have been made which show that a combine and tractor required approximately 1.4 gallons of fuel per acre of grain harvested [2] under conditions existing in the Great Plains States. Of this amount about 0.6 gallon per acre was used by the auxiliary motor.

[2] REYNOLDSON, L. A., KIFER, R. S., MARTIN, J. H., AND HUMPHRIES, W. R. THE COMBINE HARVESTER-THRESHER IN THE GREAT PLAINS. U. S. Dept. Agr. Tech. Bul. 70, 61 p., illus. 1928.

DRY GRAIN ESSENTIAL

Ripe, dry grain is one of the first essentials for the successful operation of the combine. Green or damp grain not only interferes with the threshing and cleaning operations but has a decided influence on the market value and keeping qualities of the grain. Tough straw has a tendency to clog the machine by winding on the cylinder and other moving parts. Small particles of tough straw are difficult to remove from the threshed grain as the straw is much heavier when damp or green. The combine should not be started until the grain is dead ripe, which usually is 7 to 10 days after it is customary to begin harvesting with the binder. If the threshed grain feels damp or is easily dented with the finger nail the moisture content is usually too high for safe storage. The maximum moisture content of cereal grain for safe storage depends in part upon atmospheric conditions and storage facilities, but wheat which contains not more than 13 to 14 per cent moisture is considered dry.

OPERATION

Because of the wide variation in crop and harvesting requirements, it is impossible to give definite rules which will be adequate under all conditions; yet many difficulties may be overcome by following general rules.

STARTING A NEW COMBINE

Before starting a new combine the machine should be gone over thoroughly to see if all bolts and nuts are tight. Be sure no tools are left in the machine or on the platform canvas, as serious damage may result. Turn the cylinder and other moving parts by hand to see that everything is in good order and free to move. Be sure all chains and belts are installed correctly, as disastrous results have occurred when some parts of the machine were driven in the wrong direction.

A new combine should not be subjected to its working load until it has been run idle for several hours. Run the engine at low speed for an hour or more before throwing the combine in gear. Run the combine at about half speed for not less than two hours and at full speed for not less than two hours before starting the machine in the field. Examine the bearings frequently and keep them well lubricated. In case water in the radiator should accidently run low and the engine overheat, shut off the ignition and turn the engine over by hand while the radiator is being filled. Pour water into the radiator slowly as a cracked cylinder block may result from cooling the motor too quickly.

REEL AND PLATFORM

Ordinarily the reel should be so set that the slats, when in their lowest position, will strike 6 to 10 inches above and slightly ahead of the sickle. The exact position of the reel depends upon the height of the grain, quantity of straw cut with the grain, and the condition of the straw. The reel can usually be set so that the slats will push the cut grain well back on the platform.

For lodged grain the reel should be set lower and several inches ahead of the sickle. When the reel is set low, canvas belting is some-

times tacked on the outer edge of the reel slats to brush the cut grain back on the platform without danger of breaking the slats. In adjusting the reel, care should be taken to keep it parallel with the sickle. If the combine reel is set in the shape of a spiral the slats should first strike the grain at the outer end of the platform as this will tend to feed it head first into the machine. Special guards may be secured for some machines and attached to the combine platform to assist in elevating lodged grain.

If two reel sprockets are furnished, the low-speed sprocket should be used when the combine is pulled at a speed of about 2½ miles per hour or less unless the grain is badly lodged. The reel will frequently shatter some of the grain or throw heads over the platform if driven by the high-speed sprocket at this rate of travel. The high-speed sprocket should be used when the grain is lodged or the combine is pulled at a speed of more than 2½ miles per hour.

The loss of grain by the reel and platform is usually very small when small grain is harvested; but may be as high as 26 per cent when crooknecked varieties of grain sorghum are harvested,[3] if proper precautions are not taken. A large part of this loss is due to heads which hang on the reel slats and which are thrown to the ground either in front of or behind the platform. Such losses may be decreased by the use of additional boards, wire screen, or canvas, to increase the width of the reel slats. Wide reel slats may also be used to advantage when nodding varieties of small grain are harvested. It is often advisable to increase the height of the platform backstop by attaching a screen wire or canvas frame and by placing screen wire or canvas over the outer end of the platform when grain sorghums and nodding varieties of small grain are being harvested.

The extent to which the operator can control the height of cut is usually sufficient for most crops. This range varies but is usually from about 4 to 36 inches. Unless the straw is to be saved, the cutter bar should be operated as high as is possible without missing some of the heads. The cutter bar can usually be held at the desired elevation with only an occasional change unless the grain is very uneven in height. On some machines the platform may be raised by attaching strap-iron supports in a vertical position between the platform and its supporting members, thus increasing the maximum height of cut but leaving the range the same. Such changes are needed only for grain sorghum and tall sweetclover and should not be attempted unless recommended by the manufacturer, as some parts of the machine might be subjected to undue strain.

CYLINDER AND CONCAVES

The cylinder of each combine is designed to operate within a certain range of speed except under special crop and harvesting conditions. The speed of the cylinder is rated in revolutions per minute. The rating varies with the different makes and models of combines but is usually about 1,000 revolutions per minute, depending upon the diameter and type of cylinder. The rating is such that the tips of the cylinder teeth or corrugated bars travel at about 6,000 feet per minute when threshing small grain.

[3] MARTIN, J. H., REYNOLDSON, L. A., ROTHGEB, B. E., AND HURST, W. M. HARVESTING GRAIN SORGHUMS. U. S. Dept. Agr. Farmers' Bul. 1577, 17 p., illus. 1928.

On some makes of combines corrugated bars are used on the cylinder and concaves, instead of teeth. The cylinder on this type of machine is usually run at a slightly higher speed than on the peg-tooth type.

The combine must not only cut and thresh the grain but should deliver it in a marketable condition. The proportion of foreign material and cracked grain affects the quality and grade of the grain and hence the price received for it. An improvement in quality may result in an increase of several cents per bushel in the price when the grain is sold on the market.

Dry and well-matured grain is usually comparatively easy to thresh and clean, but if it is very dry it may crack badly. Cracking is caused by the use of too many concave teeth, returning threshed grain to the cylinder with the tailings, improper concave setting, bent concave or cylinder teeth, excessive cylinder speed, end play in cylinder shaft, or too little clearance between cylinder and concave teeth. The kind and quantity of the tailings returned to the cylinder is an indication of the performance of the sieves, hence the tailings should be examined frequently. If very little threshed grain is being returned to the cylinder and cracking is evident, stop the machine and examine the cylinder and concaves for bent or loose teeth. It is usually advisable to use just enough concave teeth to thresh the grain from the heads and to keep the remaining teeth set low as the straw will not be chopped up so badly and the sieve will not clog so easily. The cylinder should be adjusted to provide uniform clearance between the concave and cylinder teeth. If cracking seems to be due to high cylinder speed, throttle the motor slightly below rated speed but not until other adjustments fail to produce the desired results.

Soybeans and grain sorghums are frequently cracked when the cylinder is run at rated speed regardless of the crop conditions and adjustments of the other parts of the combine. Throttling the engine in order to reduce the cylinder speed is not advisable because the speed of all other moving parts is reduced, the engine will not operate as efficiently, and the governor will not be sensitive to changing loads. Suitable pulleys, sprockets, or gears may be secured for some machines by which the cylinder speed may be reduced without throttling the motor or changing the speed of the other moving parts of the combine. This is usually accomplished by changing the gear or pulley ratio between the motor and cylinder, and by making a suitable change in sprockets on the cylinder shaft for driving the separating units at rated speed. The cylinder speed is usually reduced about one-half for soybeans and grain sorghums. That is, if the cylinder is rated at 1,000 revolutions per minute, for these crops the speed should be reduced to about 500 revolutions per minute. No changes in pulley or gear ratio should be attempted unless the necessary parts are recommended or furnished by the manufacturers.

Rye, oats, barley, flax, and emmer, (speltz), require approximately the same cylinder speed as wheat. Under ordinary conditions, when the rated cylinder speed is maintained, two rows of concave teeth are sufficient for barley, rye, oats, and emmer, as these crops are usually comparatively easy to thresh. Some varieties of barley, however, may require all of the concave teeth as the beards are difficult to remove from the kernels. The weather and condition of the grain govern the exact concave adjustment for any of these crops.

The concaves should usually be set high for flax since the seed is often difficult to remove from the bolls. Flax straw is tough and has a tendency to wind on the cylinder, especially if it is driven below rated speed.

Corrugated concave teeth may be used to advantage when harvesting alfalfa and clover. The concaves should be set high and the rated cylinder speed maintained. Sweet clover frequently piles up in the feeder housing, necessitating the employment of an extra man with a stiff broom to force the plants back to the cylinder.

Loss of grain caused by unthreshed heads in the straw is usually very small. However, tests made by collecting and rethreshing the straw show slightly more grain than tests in which only the threshed grain in the straw was recovered.

Poor threshing is invariably caused by improper concave setting, badly worn or bent concave and cylinder teeth, or too low cylinder speed. A speed indicator should be used for checking the cylinder speed as this is the only reliable method of determining the speed of a revolving shaft. If the cylinder is found to be running at rated speed and poor threshing is in evidence, stop the combine motor and examine the cylinder and concave teeth. Badly worn teeth not only cause poor threshing but increase the power consumption. In case poor threshing seems to be caused by the position of the concaves, raise them slightly. With tough grain it is sometimes necessary to use all of the concave teeth. In case some of the teeth have been previously removed, they should not be replaced until other adjustments fail to produce the desired results, as it is usually best to use as few teeth as will thresh all of the grain from the heads.

SEPARATOR

If threshed grain is carried out with the straw it may be because of an excessive cylinder and separator speed, an unduly strong air blast, or it may be due to overloaded straw agitators. Excessive separator speed tends to discharge the straw before the agitators have had sufficient time to shake out the grain. If the cylinder is found to be running at rated speed, decrease the air blast slightly by adjusting the wind gates. It is advisable to use as much air as possible without blowing the grain out, as more effective cleaning is secured. When a considerable amount of straw is cut it may be necessary to reduce the rate of travel or decrease the width of the swath.

FAN AND SIEVES

The quantity of foreign material in grain has a decided bearing on the grade and market value of the grain. Weed seeds, dirt, and trash must be removed ultimately. Effective cleaning often requires considerable skill but is usually under the control of the combine operator. Proper cleaning depends not only upon the adjustments of the sieves and fan but upon the effective operation of the entire machine.

It is advisable to use as much wind on the sieves as is possible without blowing the grain out. Oats, for example, are very much lighter than wheat and consequently require less wind. Adjustments for regulating the blast are provided for practically all conditions.

Small pieces of green weeds are very hard to separate from the grain. Tailings should be reduced to a minimum as the weeds will be chopped up into finer pieces each time they are returned to the cylinder. Every effort should be made to get the weeds out of the machine as quickly as possible. On some machines the tailings auger from the upper sieve may be covered with a board or a piece of sheet metal whereby the tailings are dumped back on the straw agitator rather than conveyed to the feeder house. Be sure that the machine is run at rated speed and that a sufficiently strong blast of air is supplied to lift the material as it passes over the sieves. If these precautions are not taken the weeds will tend to form a blanket over the sieves and will invariably choke the machine. It is usually advisable to miss some grain by operating with the cutter bar above the weeds if possible and to waste some grain by blowing it out of the machine rather than leave too many weeds in the threshed grain.

CARE OF THE COMBINE

MANUFACTURERS' INSTRUCTIONS

Combine manufacturers usually furnish a manual giving specific instructions as to the care and operation of their machines. This manual should be studied, as the information gained may result in a saving of time, labor, and grain.

REPAIRING

Successful combine operators appreciate the importance of getting the machine in working order before harvest time. If the machine is new it should be "broken in" as soon as possible, because if trouble develops, valuable time may thus be saved when the crop is ready for harvesting. Combines which have been used during previous seasons should be overhauled, repaired, and run for a short time several weeks before harvest actually begins. Some adjustments must be made in the field, but it is possible to have all of the parts in such condition that the necessary adjustments can be made quickly and accurately.

SPEED OF MOVING PARTS

Power from the combine motor or tractor is transmitted first to the cylinder shaft and thence to the other moving parts. All parts of the combine are so designed and connected as to operate at a speed which will give the best results under average conditions. This rated speed is usually given in revolutions per minute for the cylinder and should be maintained except under special crop or harvesting conditions. The operator should not guess at the speed but should use a speed indicator.

The cylinder speed should be determined when the combine is in operation by holding the indicator against the end of the cylinder shaft. If it is inconvenient to determine the cylinder speed directly, it may be calculated if the speed of any other shaft, driven directly by the cylinder, is known. For example, a fan shaft, which is driven by sprocket and chain from the cylinder, is found to be revolving at 500 revolutions per minute. Count the number of teeth on both the cylinder and fan shaft sprockets on which the chain is running.

Multiply the number of revolutions per minute of the fan shaft by the number of teeth on the fan-shaft sprocket and divide the product by the number of teeth on the cylinder sprocket. If there are 24 teeth on the fan-shaft sprocket and its speed is 500 revolutions per minute and 12 teeth on the cylinder-shaft sprocket the speed of the cylinder will be 1,000 revolutions per minute.

OILING

Before greasing a new machine, clean paint and dirt from all bearings and oil holes. On bearings using hard oilers force the grease in until it appears at the ends of the bearing. This forces out any dirt and insures complete lubrication of the bearing. Fill oil cups repeatedly until the space around the shaft is completely filled with oil. Manufacturers usually furnish printed instructions for the proper lubrication of their machines. These instructions should be followed, as the life of the machine depends in a large measure upon proper lubrication. Drive chains should not be oiled if sand or other abrasive substances are likely to accumulate on the chains. Chaff and particles of dust from the grain and straw are not abrasive.

BELTS AND CANVASES

When the combine is left standing overnight, exposed to the weather, remove the platform canvas and all belts or protect them from rain and dew. Old binders or headers canvases can be used to cover the combine canvases and belts or they can be removed and placed on the straw racks in the rear of the machine. If a tarpaulin is available, cover the entire machine. If the platform is held in position by springs it should be set in such a position as to relieve the tension on the springs when not in use. Straw and chaff should not be left in the combine as such material retains moisture and will cause the metal parts to rust. The greater part of the straw and chaff may be discharged by running the machine idle for a few minutes after finishing for the day.

HOUSING

Immediately after the harvest the combine should be cleaned thoroughly, both inside and out, and housed in a shed or barn under a good roof. Trash and dirt retain moisture and will cause metal parts to rust and wood parts to rot. All belts and canvas should be removed and protected from rodents. The machine, (exclusive of wearing surfaces), should be given a coat of paint, and the metal parts should be coated with a heavy oil. Linseed oil should be used on the wood parts only. While cleaning the machine inspect all parts and list the repairs needed. Such a list will be very useful in securing repairs and may save delay during the next harvest season.

If it is impossible to house the combine, remove all belts, and canvases and store them. Remove the reel and hang it up in a shed to prevent the slats from being broken or warped. Paint and oil the machine as described above. If a tarpaulin is used, tie it down in such a manner as to prevent the formation of pockets and low places where water will collect and eventually soak through and damage the machine.

ORDERING REPAIRS

When ordering repairs the make, model, size, and number, (if any), of the machine as well as the description, parts number, and quantity desired, should be given as the parts on different sizes and models are not always interchangeable. It is a good practice to give the date when the machine was purchased new as this will help to identify the model.

COMBINE ATTACHMENTS

Auxiliary equipment for the combine has been devised and used to meet some of the various harvesting conditions in different parts

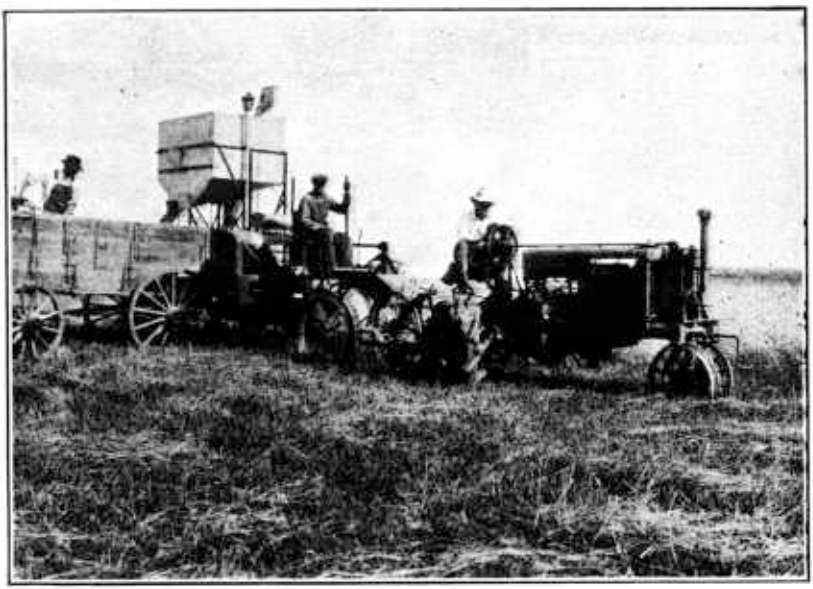

FIGURE 1.—Combine equipped with grain tank

of the country. Such attachments are usually extra and may be secured for some machines if justified by harvesting and threshing requirements.

GRAIN TANK, WAGON HITCH, AND SACKING ATTACHMENT

A grain tank, wagon hitch, or sacking attachment may be secured as desired for practically all machines. (Figs. 1, 2, and 3.) The grain tank for the larger machines usually holds about 65 bushels, whereas those for the smaller sizes hold 25 to 40 bushels. These tanks are emptied either by gravity or by an elevator and auger conveyer to a wagon or truck. When the wagon hitch is used, a wagon is attached to and drawn alongside the combine, and the grain is deposited in the wagon directly from the machine. In case the motive power is insufficient for both the grain wagon and the combine the wagon may be pulled as a separate unit. A sacking attachment may be used in lieu of either the grain tank or wagon hitch if

desired. The sacking attachment usually consists of grain spouts and a platform with dumping device where the grain can be sacked and the sacks dumped on the ground.

FIGURE 2.—Combine equipped with wagon hitch

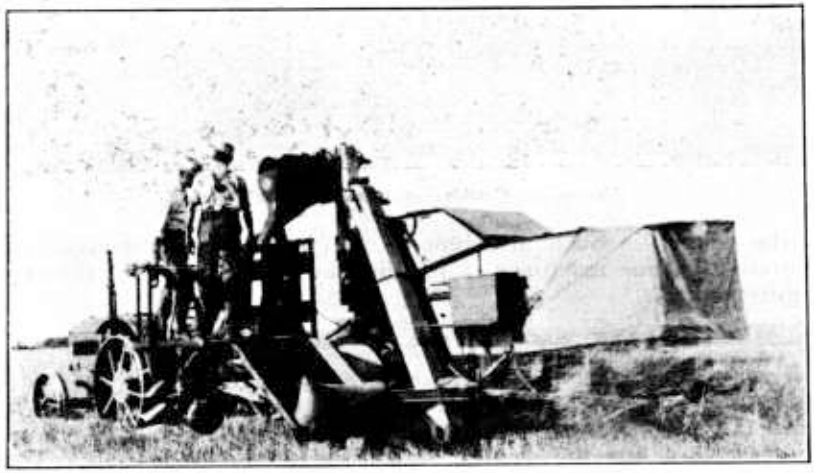

FIGURE 3.—Combine equipped with sacking attachment

PLATFORM EXTENSION

Most combines have sufficient capacity for handling a considerable quantity of straw. When the crop is light or very little straw is cut with the grain a platform and reel extension may be attached to the outer end of the platform to increase the width of cut. This equip-

ment is attached directly to the platform and reel, but the original sickle is usually replaced by one of suitable length for the longer platform.

STRAW SPREADER AND BUNCHER

The straw spreader is generally used when the straw is not needed for feed or bedding, and it is desirable to have it scattered uniformly over the field. A straw spreader is shown in Figures 3 and 9. When it is desired to save the straw a buncher may be used which dumps the straw in piles. A straw buncher is shown in Figure 4. The straw from the buncher is usually dumped by a trip rope extending to the operator's platform. If the buncher should be overloaded, straw will accumulate in the separator, and clogging will invariably

FIGURE 4.—Combine equipped with straw buncher

result. If neither the spreader nor buncher is used, the straw is left in windrows behind the combine and may be gathered with a hay loader.

SPECIAL SICKLE

Figure 5 shows a special sickle which may be used for stationary work in cutting the heads from bundles of grain sorghum. The bundles of grain are hauled to the combine, or the machine is pulled from shock to shock and the bundles fed by hand. The heads of grain fall to the platform canvas, which conveys them to the cylinder, and the bundles of stover are pitched to one side to be used for feed.

SELF-FEEDER AND STRAW STACKER

When the combine is used as a stationary thresher a self-feeder and straw conveyor may be secured for some machines. The usual

practice, however, when unbound grain is threshed is to remove the reel and use the platform as a feeder and attach the straw stacker to take care of the straw.

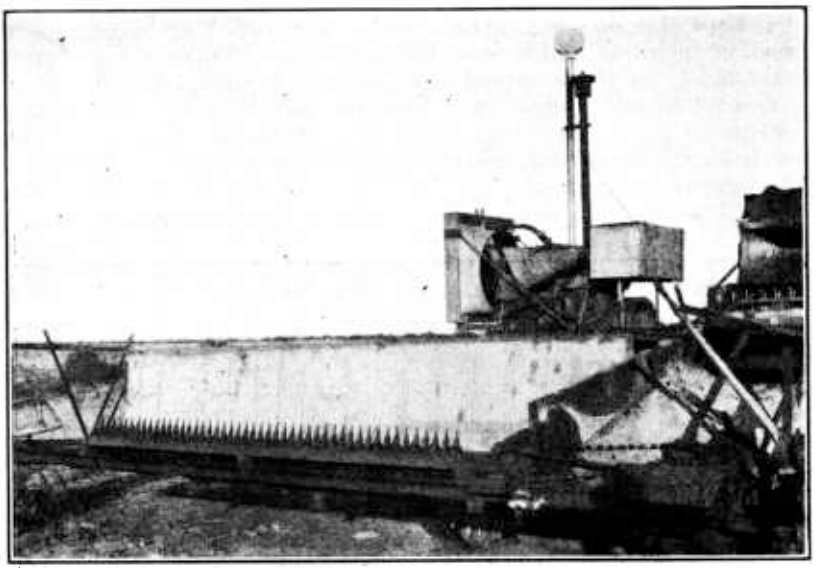

FIGURE 5.—Special sickle used for cutting heads from bundles of grain sorgbum

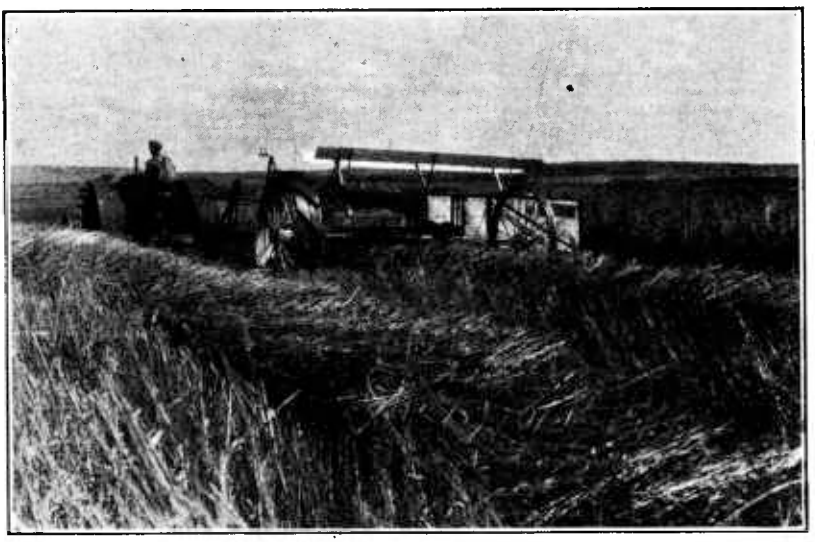

FIGURE 6.—Windrow harvester

WINDROW HARVESTER AND PICK-UP

Windrow-harvester and pick-up attachments may be secured for several makes of combines. With this auxiliary equipment the crop may be cut and piled in windrows, picked up when dry, and threshed

with the combine. Fields badly infested with weeds and crops which do not ripen uniformly have been harvested successfully by this method. Under ordinary conditions the weeds and green grass dry

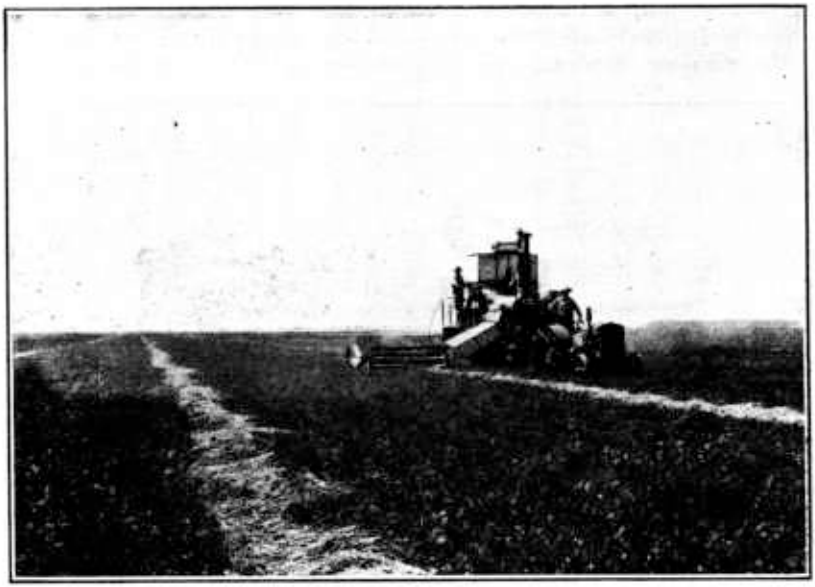

FIGURE 7.—Windrow harvester pick-up

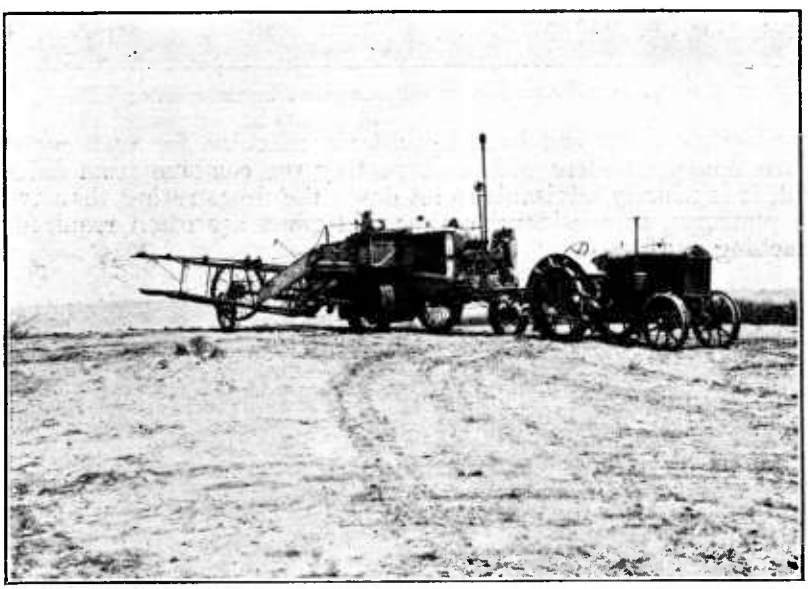

FIGURE 8.—Combine platform mounted on transport truck

out in four to eight days when windrowed, thus enabling the combine to do a better job of threshing and cleaning. A windrow harvester is shown in Figure 6, and a pick-up in Figure 7.

TRANSPORT TRUCK

A transport truck is shown in Figure 8. The header platform is disconnected from the side of the machine, mounted on the transport truck, and pulled behind the combine. This reduces the over-all width by approximately the length of the header platform. On some of the smaller combines, as that shown in Figure 9, the platform

FIGURE 9.—Combine with platform raised for transporting

may be folded up and back against the machine for transporting. When fences interfere with transporting the combine from field to field, it is usually advisable to let down the fence rather than truck the platform, as considerable time and effort are often required in attaching and detaching the platform.

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